Lesson Plan 16

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| **Title**: **Chapter 15: Oscillations** | | | **Ref. No**: Week 9,  Day 2 | |
| **Target Group/Population**: B. Sc students (CS, EEE and IPE) | | | **Duration**: 90 min | |
| **Aims/Rationale**: To give the students basic concepts of damped simple harmonic motion | | | | |
| **Learning Outcomes**: At the end of the session, the students will be able to understand and analyze above topics and apply this to solve related problems. | | | | |
| **Contents:** 15-5: Damped simple harmonic motion | Method or  Technique | Resource  or Aid | | Time |
| **Introduction**:   * Welcome address * Rapport building * Review the main topics of last lecture * Importance/bridging the topic * Pre-assessment of student’s knowledge | Lecture QA | WB  MMP | | 15 min |
| **Development**:  1. Find an expression for the angular frequency of a damped simple harmonic oscillator in terms of the spring constant, the damping constant, the mass, and approximate the angular frequency when the damping constant is small. | Lecture Discussion QA  Problem Solving | WB  MMP | | 60 min |
| **Conclusion**:   * Quick recap/summary * Feedback from the students * References * Forward planning |  | WB  MMP | | 15 min |
| Problems:  58. For the damped oscillator system shown in Fig. 15-16, with m = 250 g, k = 85 N/m, and b = 70 g/s, what is the ratio of the oscillation amplitude at the end of 20 cycles to the initial oscillation amplitude?  60. The suspension system of a 2000 kg automobile “sags”10 cm when the chassis is placed on it. Also, the oscillation amplitude decreases by 50% each cycle. Estimate the values of (a) the spring constant k and (b) the damping constant b for the spring and shock absorber system of one wheel, assuming each wheel supports 500 kg. | | | | |